MPC-ML10DVR

Digital Video Recorder
LCD Monitor

User Manual

www.MarinePC.com

Owner Record

Here is an easy-to-locate form to record the unit's serial number, and from the invoice, record the invoice date. The unit's serial number is located on the back panel.

If the unit ever requires service, please refer to this information when contacting the MarinePC Service Center.

Product	Serial Number	Invoice Date
MPC-ML10DVR	___ ___ ___ ___ ___	____ / ____ / ____

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MPC-ML10DVR

Military Grade
Digital Video Recorder
LCD Monitor

User Manual

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Welcome.

With the acquisition of an All-Weather Digital Video Recorder/Monitor, MPC-ML10DVR, we welcome you to MarinePC's family of ruggedized professional marine grade products.

You will soon become familiar with the quality difference in this bright sunlight-readable (~1 nit to 1,000 nits) Monitor, specifically designed to meet or exceed MIL-Specs for use in harsh marine environments. MarinePC has incorporated the latest LED backlighting to increase brightness and super-low dimming without increased heat, and extends temperature, shock and vibration specifications.

The MPC-ML10DVR also integrates full DVR capability directly inside the case of the waterproof monitor, eliminating separate mounting interconnecting cables, saving space and providing environmental protection and tranportability for the DVR.

The MPC-ML10DVR handles a wide-range of severe environments, making it the first choice of serious mariners for their demanding applications. Designed to be rugged, the 800x600 (SVGA) Resolution Flat Panel Display is engineered to mate perfectly to all leading edge cameras including infrared, image amplified and visible spectrum sources.

Housed in a milled billet aluminum case, the slim-profile MPC-ML10DVR is light weight and watertight, with fully sealed (IP67) case and standard MIL-C-38999 connectors. Engineered to be energy efficient to conserve power, the MPC-ML10DVR has three Composite Video inputs, with a source select button that lets you easily move between up to three inputs, and also provides one video output. Recorded files can be easily downloaded in standard .wmv file format via a USB connection.

Our MarinePC Service and Support Team is prepared to assist you – we are MarinePC.

QUICK START

Monitor Functions

Power On-Off
Brightness Up
Brightness Dn
OSD Select
Next
Previous

DVR Functions

Record On-Off
Play - Pause
Rewind
Fast Forward
Stop
Source Select

MONITOR OPERATION

Terminate Positive cable lead to 10-36 VDC positive voltage source and Negative lead to negative voltage source. Plug in cable (supplied by Marine PC or FBO) into J1 and turn CW to lock. (Connecting cable to J2 is only necessary for download.)

Connect at least one RS-170 device (camera, typically) to any of the three input cables, marked 1, 2, 3, using standard BNC coax connector. Make sure the video device is turned on and providing a signal to the MPC-ML10DVR.

Press Power On-Off Button once to turn on unit. After a few seconds of a power up routine, the first operational signal being received will be displayed. The LED backlight will automatically come on at about half brightness.

Adjust brightness by repatedly pressing the Brightness Up or Down button. Adjust to the lowest setting which still allows ease of viewing. The last step of the Brightness Down control is Backlight OFF. From this last step, pressing the Brightness Up button one short time will put the backlight in the lowest possible setting of ~ 1 nit.

NOTE: Using the lowest brightness setting (backlight off) maintains power to the other internal electronics and keeps them fully functional, including DVR recording, while saving power and night vision. Pressing the brightness button will then allow the backlight to come on and immediately display the video input and any recording function in progress. Using the Power On-Off button will turn off all electronics, including DVR recording and the video processor. Turning the unit back on this way will initiate a several second delay while all electronics initializes.

Selecting Video Sources

If more than one video device is connected and operational, selection of the video source to be displayed on the LCD is made by pressing the button located on the lower right of the MPC-ML10DVR. If two sources are present, pressing this button will switch from one source to the other. If three sources are present, pushing this button will successively display one, then the next and the next and then back to the original source. The numbering of the input channels indicates the sequence of the selection process.

Recording Video

The integrated full function DVR in the MPC-ML10DVR will record whatever is being displayed on the LCD. If there is no active input, the DVR will not function. To start recording, simply press the top right button marked REC. You will notice a RECORDING message will be displayed in the upper right margin of the LCD to indicate recording is in progress (this will not appear in the recorded file). A .wmv file with a sequenced filename will be initiated including time and date information, and will continue to capture whatever information is being displayed. If sources are switched, the DVR will continue to record through the switch. The length of the file is indeterminate. To stop recording, simply press the REC button again and the file will be closed and saved, and the RECORDING message will disappear from the display. Alternately, pressing the Stop button, marked with a square, will also stop the recording. This process can be repeated any number of times, each time creating a unique .wmv file. Any number of files can be created. A total of 8 hours of files can be recorded. If the solid state memory storing the files is already full, the DVR will start to overwrite the existing files starting with the oldest file.

VIDEO PLAYBACK

After stopping a recording, or at any other time when recording is not taking place, any video file can be played back in the MPC-ML10DVR. To review any saved file, simply press the Play-Pause button, second down on the right. The currently displayed video input on the LCD will be replaced by the gallery, a list of thumbnail images of sequentially numbered files. The last file saved will have the highest number and be highlighted when entering this list. To select any previously saved file, press the PREVIOUS button on the lower left. Press once to move back in sequence one at a time. Use the NEXT button above the Previous button to move forward. To play back the highlighted file, press the Play-Pause Button once to open this file, and press again to play file from the beginning. Press again to Pause, press again to resume play. (TIP: To speed the process from Record to Playback, simply pressing the Play button during a Recording will automatically stop and save the file and put up the thumbnail file display with the just stopped file hightlighted.)

FAST FORWARD - REWIND

While the file is being played, the file can be fast searched by using the middle two buttons on the right side. The file will then be advanced or played backward at double of normal speed.

TIP: In order to facilitate quickly locating the images to be reviewed, it is highly recommended not to just turn on the record function and let it go continuously. Rather, it is very much more useful to record many smaller files rather than one or two enormous files.

DELETE FILE

Any selected file can be permanently deleted in the unit to remove unwanted files. This will recover storage space and time for more recording. In the Playback mode, note the Select button on the left side has been repurposed and the display will show a DELETE FILE message. Press the Delete File button once, and the Display will ask you to confirm this action and require a response of YES or NO using the Previous and Next buttons.

CAUTION!

Once YES is selected, the file will be PERMANENTLY and IRREVOCABLY DELETED!!!!

LIVE DISPLAY

To return the display to the live video input from the selected source, press the Stop button, which now has the LIVE FEED message. The MPC-ML10DVR now is displaying live video. Sources can be switched and new Recorded files can be created.

DOWNLOADING FILES

To download files, an auxilliary USB cable must be attached to the MPC-ML10DVR. The cable can be attached to any PC for standard Windows file transfer of the stored .avi files in the unit to the computer. Once the cable is connected, press the Play button. The Fast Forward button on the right side now has the DOWN-LOAD message shown on the display. Press this button and the unit will now be recognized by the PC as a memory device, much like a USB stick. Files can now be either copied or moved from the MPC-ML10DVR to a file folder in the PC. It is recommended in most cases that the files be moved in order to free up storage for the next use. The process of transferring the files may take some time depending upon the number and size of the files being transferred. Once stored in the PC, any commercially available video player capable of processing files created with MPEG-4 compression (Windows Media Player, for example) can open and play the files. After the download process is complete, remove the USB cable from the PC and press the Stop button to return to Live Feed.

(NOTE: file transfers can ONLY be made from the MPC-ML10DVR to a computer. The storage in the MPC-ML10DVR is permanently write protected through the USB connection so that no external files or unwanted data can be introduced into this storage.)

NVIS OPTION

Overview

The MPC-ML10DVR is often used as a display for low light and infrared cameras for operations at night. Operator situational awareness can be further enhanced with the use of Night Vision Goggles or Monoculars, commonly referred to as NVG's. These devices amplify available light within a certain spectrum to allow visualization of objects that are otherwise undetectable. At normal display light levels, if the operator would look at the display through the NVG's, the brightness may cause them to "bloom" or become over-driven and momentarily blind the operator. The brightness of the MPC-ML10DVR can be turned down to the very lowest setting and allow for direct use with Generation 1 & 2 NVG's. For high amplification common with GEN3 NVG's, even this very low light is too much. To prevent this over-driving, NVIS "Green" compatible backlighting option is available that will limit the light used to backlight the display to frequencies not amplified by the NVG's, thereby allowing both those using NVG's and those viewing normally to look at the display. Alternately, some situations require the use of red spectrum lighting to preserve natural night vision. As an option, the MPC-ML10DVR can be configured with NVIS "Red"to allow for use in this environment The NVIS Option makes either mode of operation available to the operator through a single button action.

NVIS Green / Red OSD Setup

After pressing Select to enter the OSD, Select Tools, then select either NVIS Green or NVIS Red. Once saved in the OSD, the UP / DOWN AROW Buttons will allow the operator to toggle between that selection (Green or Red) and Day Mode. (NOTE: both NVIS colors are not available at the same time.)

The Display will now automatically power on in NVIS mode. Daylight mode can be displayed by pushing the UP ARROW Button. To return to NVIS Mode., push the DOWN ARROW button.

To Deselect the NVIS Option, reenter the OSD Select NVIS anddisable NVIS ON PWR.

SAFETY

General Safety Instructions

- Before operating the MPC-ML10DVR Monitor, read this User Manual thoroughly
- Retain this User Manual for future use
- Verify the computer system capability (see System Set-up) to insure operation of the Monitor
- For expeditious installation, follow these User Manual instructions in the sequence presented
- Adhere to all Caution and Warnings on system parts and as stated in this User manual
- All User Manual instructions for installation and operation must be followed precisely
- Adjust only those controls covered by the User Manual's operating instructions; im-

Safety Icons

Warning! Shock Hazards
This icon is intended to tell you of a potential risk of electrical shock.

Caution! Instructional
This icon is intended to tell you of important operating and/or maintenance instructions.

General Unit Safety

- Always disconnect the unit from the power source before cleaning
- Do not operate the unit with a damaged cord
- Do not operate if the unit has been dropped or damaged. The unit needs inspected by qualified MarinePC Service Personnel
- Position the power cord so it shall not be in contact with hot surfaces
- Do not allow anything to rest on the power cord, and
- Do not place the power cord where there shall be foot traffic.

General Safety Precautions

- Power cord must be connected to a properly wired and grounded power source
- Any equipment to which the unit shall be attached must also be connected to properly wired and grounded power sources
- Do not connect or disconnect the unit during an electrical storm
- Do not remove the unit covers – there are no user serviceable parts in the unit
- Do not disassemble or modify the unit to avoid the possibility of electrical shock, damage to electrical components or scratching the Display surface, and
- Disassembly of the unit voids the warranty.

Fluids from LCD Display

- If the Monitor should ever become shattered, do not touch fluids from an LCD Display
- If fluid should get on hands or clothing, immediately wipe off with liquid soap or rubbing alcohol; wash with water; consult with a doctor, and
- If fluid gets in the eyes, flush eyes immediately with water for a minimum of 15 minutes; consult with a doctor.

EMI/RFI

Product has been engineered to meet or exceed international industry standards addressing product design and enclosure protection against EMI/RFI. For compliance with specific MIL-STD-461E standards, please consult factory.

Electrical

Connecting Cables

- Disconnect power to computer when Display is being installed
- Upon installation, verify power input connector is securely seated on Display
- Position power cable so it is not in contact with hot surfaces
- Do not allow anything to rest on power cable, and
- Protect power cable from extreme heat sources.

Power Source

- Always connect to a properly grounded DC (standard) power source
- Any equipment to which Display is attached must also be connected to properly wired and grounded power sources
- Input voltage is 10 - 36 VDC

Power Consumption

MPC-ML10DVR power consumption is listed at 6 watts minimum - 20 Watts maximum.

Protection on Servicing

Servicing - User

- User Servicing is limited to cleaning the Display
- Do not disassemble or modify the Display to avoid the possibility of electrical shock, damage to its electrical components or scratching the Display surface, and
- Disassembly voids the warranty.

Servicing - Marine PC

Marine PC Qualified Service Personnel may be required to service the Display if:

- Does not operate normally when installation instructions are followed
- Does not operate normally when operating instructions are followed
- Has been dropped or damaged, or
- Exhibits a distinct change in performance, indicating a need for service.

Shipping

If Display should need to be shipped to the MarinePC Service Center, the original packing material should be used to insure safety of Display in shipping. Repack Display as it would have originally been received from MarinePC.

PRODUCT CARE AND MAINTENANCE

Product Care

This MPC-ML10DVR Monitor has been designed to provide optimum performance and service without any required scheduled maintenance other than occasional cleaning.

Turn off the Monitor power before cleaning the Monitor screen, or unit's enclosure.

- Do not use abrasive cleaners or solvent-based (flammable) cleaners on the Flat Panel or Touch Screen Display, its enclosure or any other electrical device (cables, power cord, etc)
- Do not use paper products as they may scratch the Display screen, and
- Do not directly apply cleaning solutions to the Display screen.

Display Screen Cleaning

- A vinegar-based cleaner is preferred to prevent streaking and degradation of the coatings, or
- A non-abrasive glass cleaner such as a professional foam glass cleaner
- Apply the cleaning solution to a soft clean cloth, dampening slightly
- Keep a fresh side of the cleaning cloth towards the screen surface to avoid scratching it with accumulated grit, and
- To minimize the risk of abrasion to the screen, air drying is recommended.

Monitor Enclosure

- Clean the unit enclosure with a soft clean cloth lightly dampened with a general purpose mild detergent solution
- To rinse, wipe down with clean water, and
- Dry with a soft clean cloth.

In marine or similar environments, an added benefit of a vinegar-based cleaner is its effectiveness in dissolving salt deposits.

Long-term Storage

- For long-term storage, it is suggested the unit be stored in a normal indoor environment and the Display glass be protected from accidental damage.
- For pedestal mount units, disconnect the cable(s) and loosen the arm adjustment to a point where the ball can be removed from the arm, or
- For Flush or Panel Mount units, cover the product with a protective covering that shall not scratch or transfer any dyes to the Display screen.

To avoid risk of electrical shock, do not disassemble the unit's enclosure. Users cannot service the Monitor. User maintenance is restricted to cleaning, as explained. Disassembling the unit voids the warranty.

Power Cord

To avoid shock and fire hazards, replaced the unit's power cord if:
- Insulation becomes damaged, or
- A loose connection is suspected.

Other Maintenance

Only MarinePC Qualified Service Personnel shall perform all maintenance except for the repair or replacement of external cables.

SYSTEM SET-UP

System Requirements

The MPC-ML10DVR accepts a standard NTSC composite video signal from any device – a camera, DVD or VCR.

Shipping Box Contents

The MPC-ML10DVR is shipped in a custom box with custom packaging. It is recommended that the installer should save box and all packaging materials in case Display should need to be returned to the MarinePC Service Center.

Shipping box contents are:
- MPC-ML10DVR Display
- Mounting Hardware (For RAM or Surface Mount Only)
- User Manual
- Optional Cables (if Ordered)

INSTALLATION

The MPC-ML10DVR is designed to be mounted with a universal ball-and-socket mounting kit, in a Flat Panel position or optional Flush Mount configuration.

Pedestal Mount

The MPC-ML10DVR is shipped with a RAM® universal ball-and-socket system mounting kit (Figure 2). By installing Display with this kit, User can quickly adjust the viewing angle to improve viewability in changing environments. This ball-and-socket system has proven to be successful in supporting an extreme amount of weight in high vibration and difficult-mount applications. Visit www.marinepccom for product mounting diagrams.

Locate the ball-and-socket system in shipping box. This kit consists of two RAM balls on mounting plates and a RAM arm, with an adjustable T-knob and a packet of three (3) M4 x 10 counter-sunk stainless screws for mounting. (Figures 2 - 4)

Figure 2

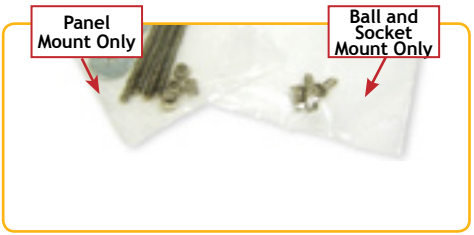

Figure 3

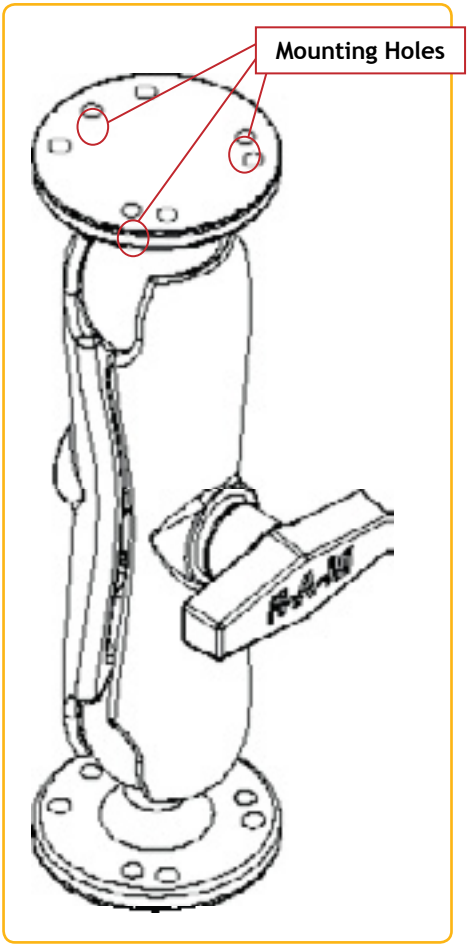

Figure 4

There are three mounting holes in the center-back of Display for the ball mounting plate. Take care not to strip screw holes or over tighten. (Figure 4)

- Note location of three mounting holes on a ball mounting plate (Figure 4)
- With three (3) M4 x 10 counter-sunk stainless screws attach this mounting plate to back of the MPC-ML10DVR
- Mount second ball mounting plate where Display will be installed
- Insert each ball into RAM arm
- Lightly tighten arm around balls using T-knob on arm (Figure 2, 4)
- Adjust Display to viewing preference, and
- Tighten T-knob to hold Display in position.

It is recommended the remaining ball be mounted on a flat surface. Because of various surface substrates Display will be mounted on, installer will provide screws to mount other ball.

Panel Mount

Panel Mount installation should be specified at time of order; the ball-and-socket mount system will not be included in the shipping box. (Figure 5)

For installation, there are four tapped mounting holes on four corners of the Display's rear panel. Mounting hardware packet is included with product accessories in the shipping box. This packet includes four (4) M4 stainless steel threaded studs, 7.6 cm (3" long), four (4) Nylock self-locking nuts and four (4) flat washers.

It is recommended installer refers to mount drawings on MarinePC's web site, (www.MarinePC.com), for exact measurements. These drawings should be helpful when installer cuts the required opening for the Panel Mount installation.

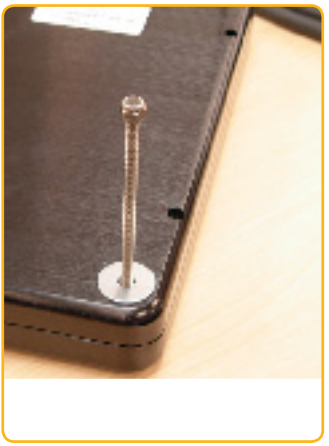

Figure 5

CAUTION! Take care not to strip screw holes or over tighten as the enclosure is aluminum.

DISPLAY CONNECTIONS

Cables

Cables may be supplied by end user. Use the pinout guide below for fabrication.

Connectors

Connectors are located on bottom of Display housing, from left to right: Power / Video Input and USB Input. (Figure 6).

Connectors are physically unique to insure installer makes correct connections.

Figure J1 J2 GND

J1 Power / Video Input
J2 USB Input

Power / Video Connector

TVR-V accepts a standard NTSC composite video signal from an assortment of devices. The MIL-DTL 38999 Series 1 Power and Video Connector has a 13 pin plug. J1 Pin-out is indicated in Table 1.

POWER & VIDEO 13 PIN PLUG MIL-DTL-38999 SERIES I	
PIN	SIGNAL
1	RS-170 (3) SIGNAL
2	RS-170 (3) GND
3	RS-170 (2) SIGNAL
4	RS-170 (2) GND
5	RS-170 (1) SIGNAL
6	RS-170 (1) GND
7	+28 VDC
8	+28 VDC
9	-28 VDC GND
10	-28 VDC GND
11	CHASSIS
12	RS-170 OUT SIGNAL
13	RS-170 OUT GND
AMPH	88-569722-35P
MATE	MS27467E11B35S
STRAIN	M85049/49-2-10W

Table 1

USB 4 PIN PLUG MIL-DTL-38999 SERIES I	
PIN	SIGNAL
1	+5VDC
2	USBD -
3	USBD+
4	GND
AMPH	71-533721-04P
MATE	MS3116F8-4S
STRAIN	Included

Table 2

USB Connector

MPC-ML10DVR accepts a USB signal. The MIL-DTL 38999 Series 1 USB Connector has a 4 pin plug. J2 Pin-out is indicated in Table 2.

Ground

A location for chassis bonding ground is available on the rear of enclosure.

OPERATOR CONTROLS

On left hand side of Display bezel are six (6) Operator Control Buttons (Figure 7).

These Buttons are used in the basic operation of the Display as well as when using the the Digital Video Recorder (DVR) (See Digital Video Recorder for instructions).

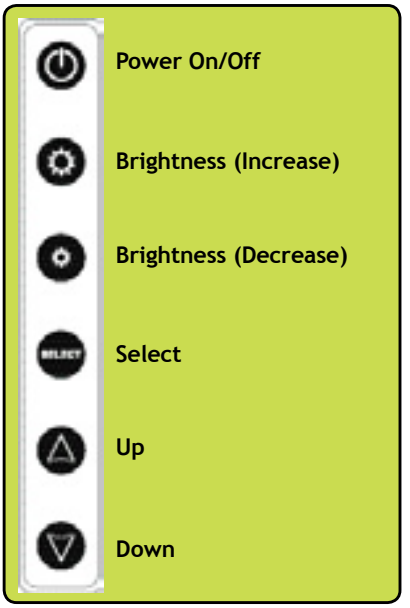

Figure 7

Power ON/OFF Button

- Power ON/OFF Button is identified with a circle cut with a vertical slash
- Press and release to turn Display's backlight ON or OFF only, and
- Blue LEDs glow behind Buttons when Display is powered on.

Brightness Controls Buttons

Brightness Control Buttons control Display Brightness. Upon unit power up, factory default is at maximum brightness.

- LARGE SUN Button: when repeatedly pressed or held down will cause the Display's backlight brightness to step up in increments to its brightest setting
- SMALL SUN Button: when repeatedly pressed or held down will cause the Display's backlight brightness to step down in increments to its lowest setting,
- Control's lowest setting is near total black making it suitable in very subdued light, as in night time operations, and
- Adjusted settings are maintained during power cycles (ON/OFF Button), and
- Brightness Settings return to factory default at main power recycle.

Select Button

The SELECT Button is used to access the OSD Menu.

Up Arrow Button

The UP Arrow Button is an adjustment or decision choice.

Down Arrow Button

The DOWN Arrow Button is an adjustment or decision choice.

ON-SCREEN DISPLAY

The On-Screen Display (OSD) User Interface is where display adjustments are made. With its user-friendly graphical interface, the OSD Menu provides access to fine-tuning the Display according to the User's preferences.

OSD Menu Activation

To activate the OSD menu, press and release SELECT Button.

Note: OSD Menu closes after 30 seconds of inactivity. This setting may be adjusted in the OSD Menu: Tools: OSD Timeout.

OSD Menu Categories

The OSD Menu is comprised of five icons and an Exit Button; each icon represents a distinct menu category with its corresponding functions. (Figure 8)

Note: OSD Menu selections are indicated by icon only; there is no text.

Figure 8

General Operating Instructions

- To open the OSD Menu, press (once) the SELECT Button
- OSD Menu appears across bottom of Display screen;
- Use UP or DOWN Button to move across Menu; selected icon turns yellow (Figure 9)

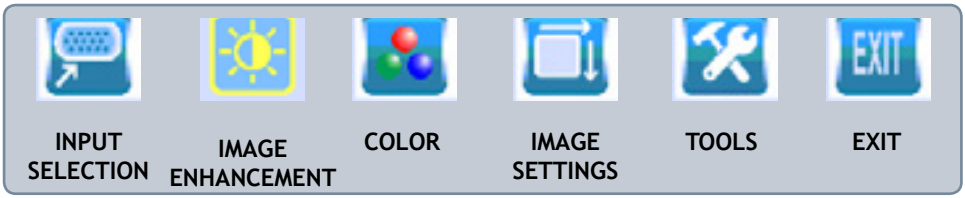

Figure 9

- As Main Menu icon is highlighted, its Submenu appears in OSD dialog box
- Press (once) SELECT Button to enter selected Main Menu icon Submenu screen
- A highlight bar is superimposed over the first menu item
- Press UP or DOWN Button to move the highlight bar through the Submenu
- Press (once) SELECT Button to activate the highlighted Submenu item
- To Change values: press UP or DOWN Buttons, which increases (UP) or decreases (DOWN) the value of the parameter as indicated in OSD dialog box; hold Button down

- Press (once) SELECT Button to go to a new menu item (Figure 10), or
- Press (once) SELECT Button to save new value or wait for OSD to timeout; it will auto-close, saving all changes
- To choose another menu item, use UP or DOWN Button to move across Main Menu; repeat instructions, and
- To Exit, use UP or DOWN Button to move across OSD Menu to highlight Exit Sign icon; press (once) SELECT Button to Exit; upon Exit, all changes are saved.

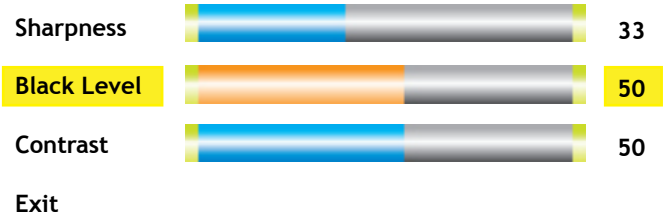

Figure 10

CAUTION!

Saving Changes

- The Exit Button saves adjustments made to the OSD then exits the Menu, or
- If the OSD times out, any adjustments made will automatically be saved, then the Menu closes.

OSD Menu Categories

Input Selection

The Input Selection Menu enables a selection of three Composite video input signals. Selection is based on Display configuration and its dependency upon a specific signal source. Main power recycle resets input source to default, C Video 1 (Composite).

Note: The SOURCE Button on the Display allows for moving through various video input signals without accessing the OSD Menu.

C Video 1

Select for first Input Signal. Select Exit Button to save.

C Video 2

Select for second Input Signal. Select Exit Button to save.

C Video 3

Select for third Input Signal. Select Exit Button to save.

Exit

Select Exit Button to save changes and exit from OSD Menu.

Image Enhancement

The Image Enhancement Menu enables adjustments of Image Enhancement values.

Sharpness

Select Sharpness to adjust Sharpness of displayed image. Use UP (right) or DOWN (left) Button to adjust in preset increments. Select Exit to save.

Composite input signal factory default is 33 within a range of 0 - 100.

Black Level

Select Black Level to adjust Black Level of input Composite Signal. Factory default is 50 within a range of 0-100. Use UP (increase) or DOWN (decrease) Button to adjust in individual increments. Select Exit Button to save.

Contrast

Select Contrast to adjust difference in brightness between light and dark areas of Display pixels. Factory default is 50 within a range of 0 - 100. Use UP (increase) or DOWN (decrease) Button to adjust in individual increments. Select Exit Button to save.

Exit

Select Exit Button to save changes and exit from OSD Menu.

Color

The Color Menu enables adjustments of Color Parameters of the Display image.

Composite Input Signal

Hue

Select Hue to adjust shading (gradation) within colors. Factory default is 50 within range of 0 - 100. Use UP (increase) or DOWN (decrease) Button to adjust in individual increments. Select Exit Button to save.

Saturation

Select Saturation to adjust intensity or vividness (saturation) of color. Factory default is 50 within range of 0 - 100. Use the UP (increase) or DOWN (decrease) Button to adjust in individual increments. Select Exit Button to save.

Color Reset

Select Color Reset to reset active Composite signal Color parameters Hue and Saturation to factory default values (50). Select Exit Button to save.

Note: Color parameters will reset active Composite Video Input Signal only.

Exit

Select Exit Button to save changes and exit from OSD Menu.

Image Settings

The Image Setting Menu enables Display screen adjustments if Display is set-up for a VGA Input Signal.

Note: Composite: Icon will be grayed, as it is unavailable.

Tools

The Tool Menu enables adjustment of miscellaneous parameters.

OSD Timeout

Factory default OSD Timeout setting is 30 seconds. Interval selections are Off, 5, 15, 30 and 60 seconds. Select to adjust time elapse between last Menu activity and when Menu exits. Use the UP (increase) or DOWN (decrease) Buttons to change the values. Select Exit Button to save.

Note: Any changes made in will be saved upon Timeout Exit.

Set Date and Time

Select Set Time to set-up Time (military) and Date stamp for Digital Video Recordings. Wait for DVR to cycle to DATE / TIME set screen.

Set Date
Display will read a Date format of Year / Month / Day (2007/01/01)

- Use UP or DOWN Arrow Button to move through Date format (Year, Month, Day)
- Press SELECT to go into Active Mode to change format; note highlighted spaces
- Use UP or DOWN Arrow Button to set current Year
- Press SELECT to go into Inactive Mode
- Use UP or DOWN Arrow Button to move to Month; Months are highlighted
- Press SELECT to go into Active Mode
- Use UP or DOWN Arrow Button to set current Month
- Press SELECT to go into Inactive Mode
- Use UP or DOWN Arrow Button to move to Days; Days are highlighted
- Press SELECT to go into Active Mode
- Use UP or DOWN Arrow Button to set current Day
- Press SELECT to go into Inactive Mode
- Use UP or DOWN Arrow Button to move to Time

Set Military Time

Set Time (Military)
- Press SELECT to go into Active Mode
- Use UP or DOWN Arrow Button to set current Hours (Military)
- Press SELECT to go into Inactive Mode
- Use UP or DOWN Arrow Button to move to Minutes
- Press SELECT to go into Active Mode
- Use UP or DOWN Arrow Button to set current Minutes
- Press SELECT to go into Inactive Mode
- Use UP or DOWN Arrow Button to move to Seconds
- Press SELECT to go into Active Mode

- Use UP or DOWN Arrow Button to set current Seconds
- Press SELECT to go into Inactive Mode

When set, find EXIT dialog on right hand of Display screen by STOP Button

- Select STOP Button to Save and Exit the Date / Time Settings
- Display returns to default screen; to return to Tools, go to SELECT > Arrow to Tools > Select to enter

Format DVR

Format DVR
Format DVR will erase ALL video files in the DVR Video Gallery.
Files are not retrievable.

Select Format DVR to erase ALL video files in the DVR Video Gallery.

- Dialog appears: Confirm: Delete Selected File(s) now
- On left bezel locate text: Delete All Files, followed by No, Yes
- Select No (UP Arrow) to not delete file(s)
- Select Yes (DOWN Arrow) to delete file(s)
- Deleted files will not be retrievable

Factory Reset

Factory Reset
Factory Reset will reset all OSD changes made to Video set-ups.

Select Factory Reset to reset Display screen adjustments Color Settings ***(Sharpness, Black Level, Contrast)*** and Color ***(Hue, Saturation)*** to factory default values (50). Select Exit Button to save.

Exit

Select Exit Button to save changes and exit from the OSD Menu.

DIGITAL VIDEO RECORDER

A fundamental design feature of the MPC-ML10DVR Display is its integrated Digital Video Recorder (DVR). The internal DVR provides real-time recording of high frame-rate (30 fps) 24-bit hi-resolution imagery.

Previously made recordings are stored in the Video Gallery. These are marked with its Time/Date stamp; this will be readable when Display is connected to a PC and viewed as a remote disk drive.

See DVR Menu for instructions on saving and retrieving these recordings.

On right hand bezel are six (6) DVR Control Buttons (Figure 11). These are used in the basic operation of the DVR.

Figure 11

DVR Modes

The DVR has two modes: Standard (live video feed) and Playback (DVR Menu; view video recordings)

Standard Mode

Standard Mode displays live video feed from the selected input source.

Recording Live Feed

Press RECORD Button to start recording. When Display is in RECORD mode, RECORDING text is posted in Display screen's upper right corner.

Stop Recording

When recording is stopped, Display screen returns to Standard Mode showing live video feed from the input source.

There are several ways to stop a recording.

- Press STOP Button to stop the live video feed recording
- Press RECORD Button again to stop the live video feed recording, and
- Press PLAY / PAUSE Button to stop the live video feed recording and move to the DVR Menu for recorded files.

To start a new recording, press STOP to return to Live Feed. Press RECORD to start a new video file.

Playback Mode

In Standard Mode, press PLAY / PAUSE Button to move to DVR Menu Video Gallery for thumbnail views of recorded video files. These are displayed in a 3 x 3 grid.

- Most recent recording defaults to next thumbnail position in Video Gallery, and
- Files are numbered in descending order.

On left bezel, use UP (Next) or DOWN (Previous) Arrow Buttons to move through thumbnails to select a video to view or to move to another Video Gallery page in the DVR Menu. A highlight box will appear around the selected (active) Thumbnail.

- Press PLAY / PAUSE Button again to open highlighted video in Full Screen
- When file plays to the end it will rewind to opening screenshot
- Press PLAY / PAUSE to stop video
- Press PLAY / PAUSE to return to video file play, or
- Press SELECT to return to DVR Menu, or
- Press STOP to return to Standard Mode, live video feed.

Note: Video file can be deleted: if Delete is selected on left, warning text box opens: Confirm file deletion by selecting UP (No) or DOWN (Yes) Button.

Fast Forward Button

Press FAST FORWARD Button to advance to a different section of video file. The video will advance to the end of file; when it stops, view will default to the beginning of file.

Pause Fast Forward

- Press PLAY / PAUSE to stop fast forward action, and
- Press PLAY / PAUSE again to resume video play.

Rewind Button

Press REWIND Button to stop playing of video file.

Press REWIND to go rewind to a different section of video file. The video will rewind to the beginning of file; when it stops, the view will default to the beginning of file.

Pause Rewind

- Press PLAY / PAUSE to stop rewind action, and
- Press PLAY / PAUSE again to resume video play.

Source

Use SOURCE button to move live feed between the three inputs: C1, C2 and C3.

DVR Specifications

File Format

Video files are compressed in the industry-standard MPEG4 file format and saved with an .AVI extension.

File Storage Capacity

Total video file storage capacity is approximately 8 GB.

File Recording Time

Full Motion, Full Color: recording time is approximately 8 hours

Recording of black and white data (i.e. infrared (IR) camera) and/or lesser bandwidth signals will result in more than 8 hours of recordability.

VIDEO GALLERY

The MPC-ML10DVR Display has storage capacity for previously recorded videos. These may be viewed through the Video Gallery. User may review previously recorded videos in a Thumbnail or Full Screen Mode.

When Standard Mode is active, access to Video Gallery is through SELECT Button on Display's left bezel or by pressing PLAY / PAUSE Button. See DIGITAL VIDEO RECORDER section: Playback Mode for instructions on viewing recorded video files.

Delete Video File

An individual video file may be deleted in Playback Mode only. Once it is deleted, the video file is not retrievable.

Use left bezel SELECT Button to return to DVR Menu. Locate text dialog on Display Screen's left and press corresponding Button to Delete file: UP (No) or DOWN (Yes).

Once selected, a confirmation text box appears to verify file is to be deleted. Again, press UP (No) or DOWN (Yes) Buttons confirm file deletion.

After file is deleted, screen returns to Gallery view and highlights the most recent video file.

Delete All Video Recordings

For instrucitons to delete all Video Gallery files, go to Tools Menu > Format DVR.

Download Video Gallery

The Display appears as a remote disk drive to a PC connecting through the USB 2.0 port. Follow standard industry instructions to copy or remove files from Display's storage media to PC's storage media. NOTE: The unit must be powered up and at least one active video signal connected in order for the download function to operate.

Secure Erase

Secure Erase is to be used only in the event of an evacuation scenario that requires User to leave no data behind. This also will disable digital recording capability.

Press STOP Button twice (2x) in quick succession to access Secure Erase.

Locate text dialog on Display Screen's left and press corresponding Button to perform Secure Erase: UP (No) or DOWN (Yes).

A warning dialog will appear: Secure Erase will remove all files and permanently disable DVR functionality. Restoration of functionality is possible only at the factory.

Secure Erase will remove all files and permanently disable DVR functionality.

APPENDIX A

Mechanical Drawings

Mount diagrams of the MPC-ML10DVR and its dimensions may assist you in installation of the Monitor. You may find them on our website at:
http://www.marinepc.com
Mount diagrams of the optional Flush Mount Bezel and its dimensions may assist you in installation of the Monitor. You may find them on our website at:
http://www.marinepc.com

APPENDIX B

Troubleshooting

Display

Symptom: *No light behind button LEDs*

Possible Problem	Solution
No power, loose power connection	Confirm the Monitor is properly connected to a power source. Verify the power source is live or try another battery or power source. Verify the Monitor is powered on.
Reverse Polarity	Check polarity of the power connection.

Symptom: *Light behind button LEDs, no display, or "No Signal" error message and/or no image on the display*

Possible Problem	Solution
Power on, no video signal	Verify that at least one live video input is plugged into the monitor. Check the Brightness front panel setting on the Monitor. This may be set too low. Check the Brightness and Contrast controls in the OSD. These may be set too low. Verify that the video source is functioning properly and is outputting a video signal compatible with the MPC-ML10DVR.

Symptom: *Picture quality, image stability is distorted.*

Possible Problem	Solution
Not working in 640x480 mode.	Verify the video signal is compatible with auto-scaling of the monitor video card.
Proper cable grounding and shielding	Verify the use of a proper video cable with suitable grounding and shielding. Keep the video cable away from sources of EMI and RF.
Improper video display settings	Check signal source for proper signal.
Monitor has incorrect or bad sync signals.	Check for proper video cable installation, or replace suspected faulty cable.

APPENDIX C

Technical Specifications

Display	10.4” Diagonal, TFT AM, VGA, LCD, 256K Colors. 800 x 600 pixels
Sunlight Readable Backlight	~1,000 nits, LED Backlighting System
Dimming Ratio	Dimmable to ~1 nit, Last Step Off
Video Inputs	3 Independent Composite Video, RS-170 NTSC or PAL
Video Output	1 Composite Video Output, Repeats Current Image Being Displayed
Housing	Milled Aluminum, Black Anodized, UV Clear Coat Matte Finish
Mounting	Panel Mount or RAM Mount
Power Consumption	6 Watts Min - 20 Watts Max
Wide Range DC Power Input	10-36 VDC (12, 24, 28 VDC nominal)
Power Conditioning	Internal Short Circuit Protection, Load Dump Protection, Over Voltage Protection Reverse Polarity Protection

Environmental Specifications

Operating Temperature	-40˚C to 70˚C (-40˚F to 158˚F)	MIL-STD-810G
Storage Temperature	-40˚C to 75˚C (-40˚F to 167˚F)	MIL-STD-810G
Shock	Method 516.5	MIL-STD-810G
Vibration	Method 514.6	MIL-STD-167-1A
IP Rating	IP67, Method 512.5	MIL-STD-810G
Humidity, Salt Fog	Method 507.5, 509.5	MIL-STD-810G
EMI	CE-101,-102, CS-101,-114, RE-101,-102, RS-101,-103 (Independent of Cables) (Consult Factory for specific curves.)	MIL-STD-461E
Altitude	45,000 ft., Method 500.5	MIL-STD-810G

NOTES

Warranty Terms and Conditions

MarinePC offers it's products and services for sale under the following terms and conditions. Any and all orders will be accepted only at the sole discretion of **MarinePC** and under these terms and conditions. Any modification to these terms and conditions can only be made by **MarinePC** in writing. Agreement to any modifications must be made by all participants of the sale prior to the acceptance of any order.

Prices: All published prices are in effect from the date noted on the price sheet. Prices are subject to change without notice. Written quotations may be requested. Written quotations are valid for 30 days. All prices are quoted in U.S. dollars. Any and all taxes, tariffs, currency translations, duties, insurance, freight charges and any other handling charges are the responsibility of the purchaser, and must be prepaid and/or charged.

Acceptance: All orders will be accepted at the sole discretion of **MarinePC**. Any order can be rejected for any reason at any time without liability.

Payment: All purchasers must prepay the order, accept COD shipment or arrange for other acceptable methods of guaranteed payment (credit card, bank letter of credit, etc.) before any order will be shipped. VISA, MasterCard, DiscoverCard and American Express are welcomed and encouraged.

Shipments: All shipments are FOB Scottsdale, Arizona. Purchaser is encouraged to provide **MarinePC** with shipping authorization on their freight account. Unless otherwise specified, **MarinePC** will select the best way for shipment, using common carrier, FedEx Ground or UPS Ground. Shipments that are not billed to consignee or third party will incur a 20% handling charge and be added to the invoice. Delivery is not guaranteed. All risk of loss is assumed by the purchaser upon delivery by **MarinePC** to the carrier. Special terms may apply for international shipments. Unless otherwise specified by the purchaser and accepted by **MarinePC** at the time of purchase, **MarinePC** reserves the right to partial ship any order.

Cancellations: Once an order is placed by the purchaser and accepted by **MarinePC**, cancellation charges will apply to any and all unshipped items. Partial credit may be extended if products are returned unused in original packaging within 30 days of shipment. No credit will be issued on any returns or cancellations after 30 days from date of shipment.

Returns: Once a product has been shipped, no returns will be accepted unless an RMA number has been issued by **MarinePC** prior to it's return. The RMA number must be prominently displayed on the outside of the returned packing materials. **MarinePC** cannot be responsible for damage from shipping. All authorized returns must be shipped prepaid directly back to **MarinePC** in the original packaging. Returnee is responsible for all shipping and handling costs to and from the closest **MarinePC** authorized repair location. For authorized in-warranty service only, **MarinePC** will pay for the return of the unit via normal domestic ground service. Expedited return service or shipment outside of U.S. must be prepaid by receiving party.

Standard Limited Warranty: **MarinePC** warrants its products to be free from defects in materials for a period of Two (2) Years from the date of the original shipment from the factory. **MarinePC** agrees to repair the product without labor cost to the purchaser, for a period of One (1) Year from the original ship date. No other warranty is expressed or implied. Specifically excluded is normal wear and tear, abuse or misuse of the products. **MarinePC** does not make any claims or warrant the products with respect to the purchaser's use or application of the products. Products returned but found not to be within the terms of this warranty are subject to a service fee to be paid prior to the return of the product to the purchaser.

Liability: Any claim which may be made against **MarinePC** with regard to this contract for sale must occur within One (1) year from date of original shipment from the factory. IN NO EVENT SHALL **MarinePC** BE LIABLE FOR LOSS OF PROFITS, LOSS OF USE, LEGAL OR PROFESSIONAL FEES, CONSEQUENTIAL OR INCIDENTAL DAMAGE OR FOR SPECIFIC PERFORMANCE OF THE PRODUCTS, THEIR MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.